Clean Sediment Workshop
EPA Wetlands Division Perspective

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1996 National Water Quality Inventory: Report to Congress

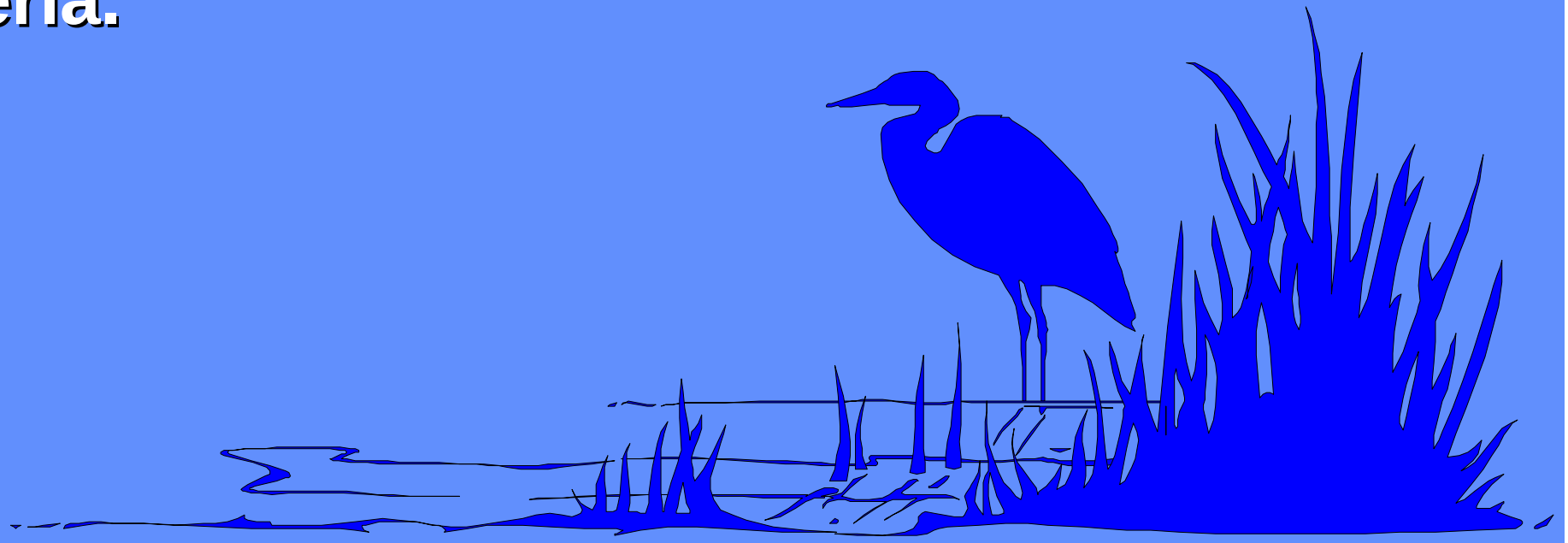
- States identified sediment and nutrients as top sources of wetland impairment.
- Excessive sedimentation or turbidity can alter wetland functions and degrade biology.
- Some wetlands need sediment inputs.

Water Quality Standards

“Water Quality Standards for Wetlands” (1990)

“Wetlands and 401 Certification” (1990)

Few states have wetland specific standards or criteria.



EPA Water Quality Criteria and Standards Plan

- $ EPA will help states and tribes adopt designated uses for wetlands.
- $ EPA will help states refine water quality standards where necessary.
- $ EPA will provide guidance for wetland bioassessment methods.

Major Strengths of Bioassessments

- Direct measurement --- not a surrogate
- Accounts for all stressors (chemical, physical, and biological)
- Accounts for intermittent and cumulative effects
- Helps to diagnose stressor(s) impacting biota

Applications of Wetland Biological Assessments

- Refining Water Quality Standards
  - Establishing criteria appropriate for wetlands
- Improving §401 Water Quality Certifications
  - Indirectly impacts §404 permit decisions
- Tracking Wetland Condition
  - §305(b) Reports

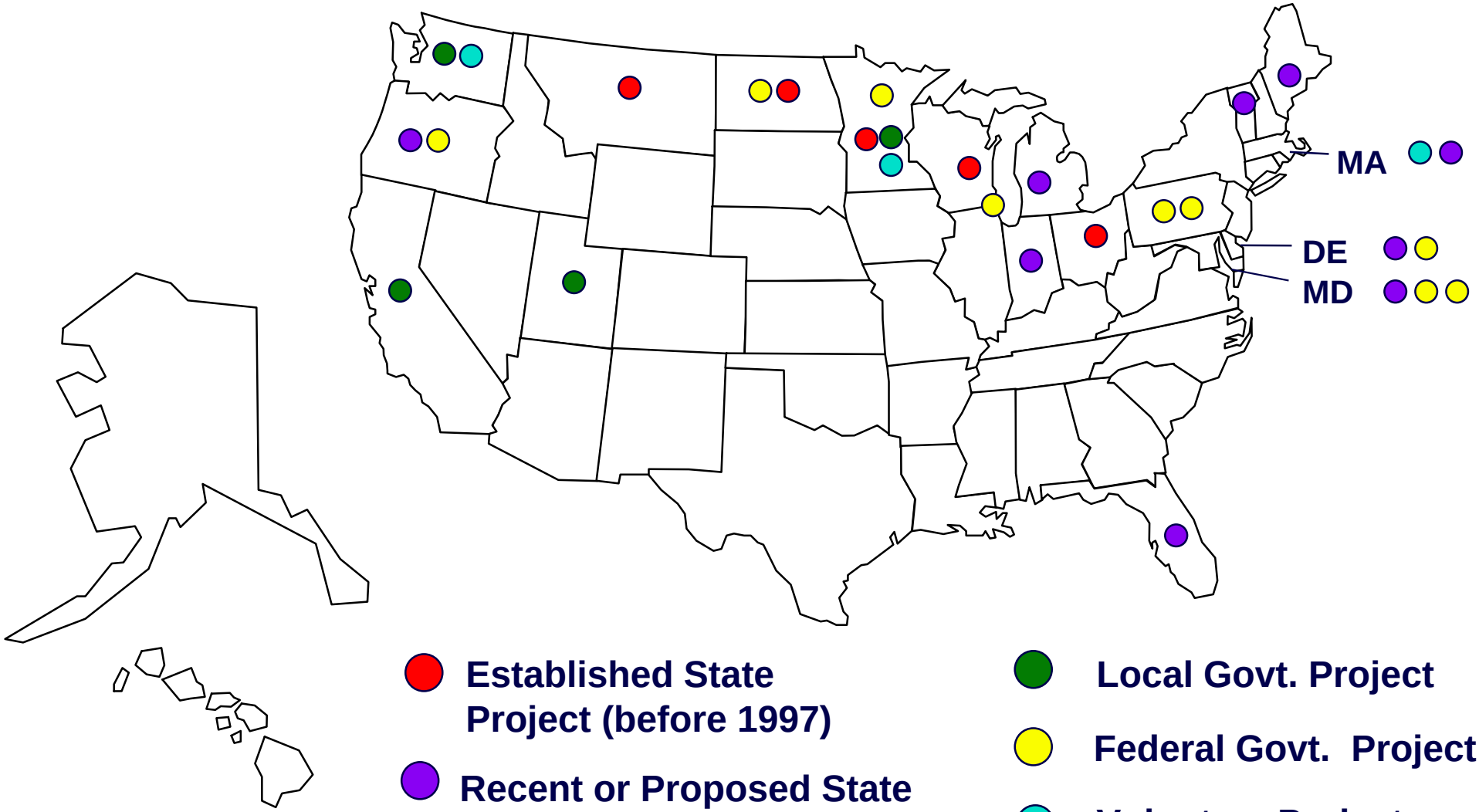
Watershed Applications of Wetland Bioassessments

- Assess impacts of land use in surrounding watershed
- Evaluate BMP effectiveness
- Evaluate siting of restoration and impact on associated waterbodies
- Evaluate success of restoration activities

Watershed Applications of Wetland Bioassessments

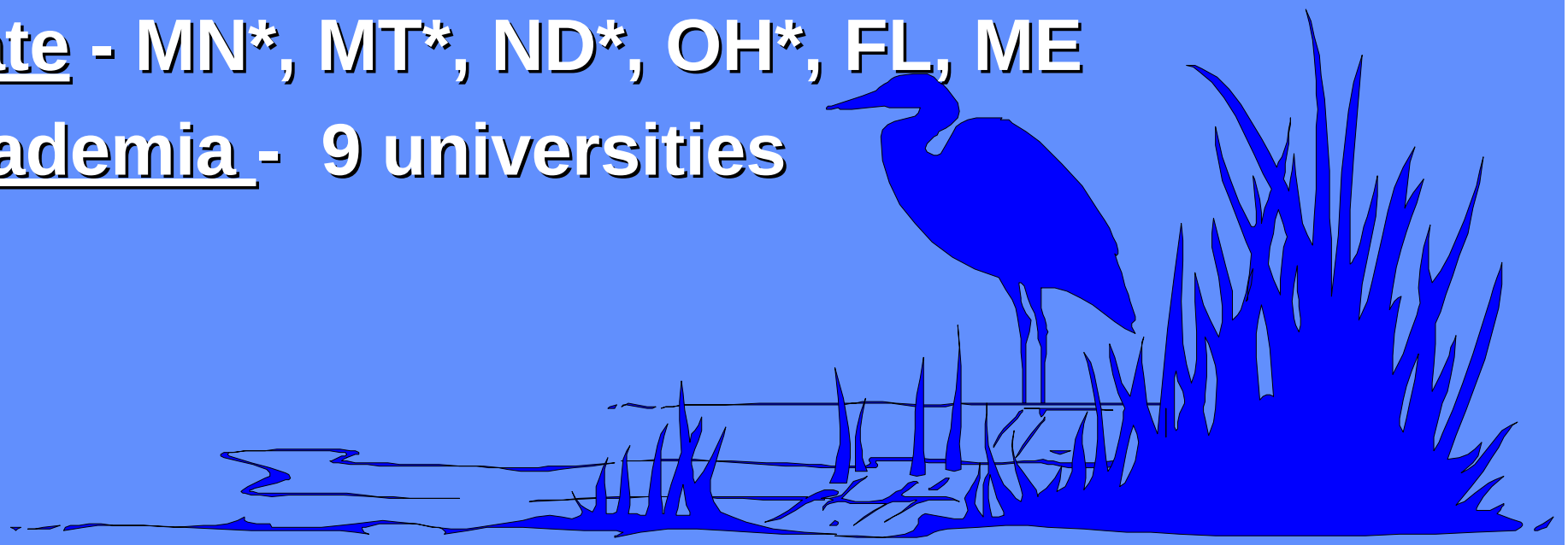
- Prioritize Protection and Acquisition Efforts
- Improve Local Planning (*e.g.*, establishing buffer zones, siting development, creating conservation areas)
- Develop Volunteer Monitoring Programs

Wetland Bioassessment Projects



Biological Assessment of Wetlands Workgroup (BAWWG)

- **Federal** - EPA, USGS, NRCS, FWS, Corps, Smithsonian
- **State** - MN*, MT*, ND*, OH*, FL, ME
- **Academia** - 9 universities



BAWWG Topics

- Testing Sampling Methods
- Selecting and Testing Metrics
- Analyzing and Managing Data
- Classifying Wetlands
- Selecting Reference Wetlands

Assemblage

- **Definition** - a group of organisms that are ecologically (*e.g.*, benthic macroinvertebrates) or taxonomically (*e.g.*, fish, birds) related.
- **Multiple assemblages** - use of more than one assemblage is believed to give greater accuracy in detecting impairment, as well as decreasing uncertainty in assessment

Assemblages Used in Wetland Bioassessment Projects

	ME	MN	MT	ND	OH	Patuxent
Plants	✓	✓	✓	✓	✓	✓
Macroinverts	✓	✓	✓	✓	✓	✓
Algae	✓	-	✓	✓	-	-
Birds	-	-	-	-	-	✓
Amphibians	-	✓	-	-	✓	✓

Phase I - Developing an IBI

Measure many biological attributes

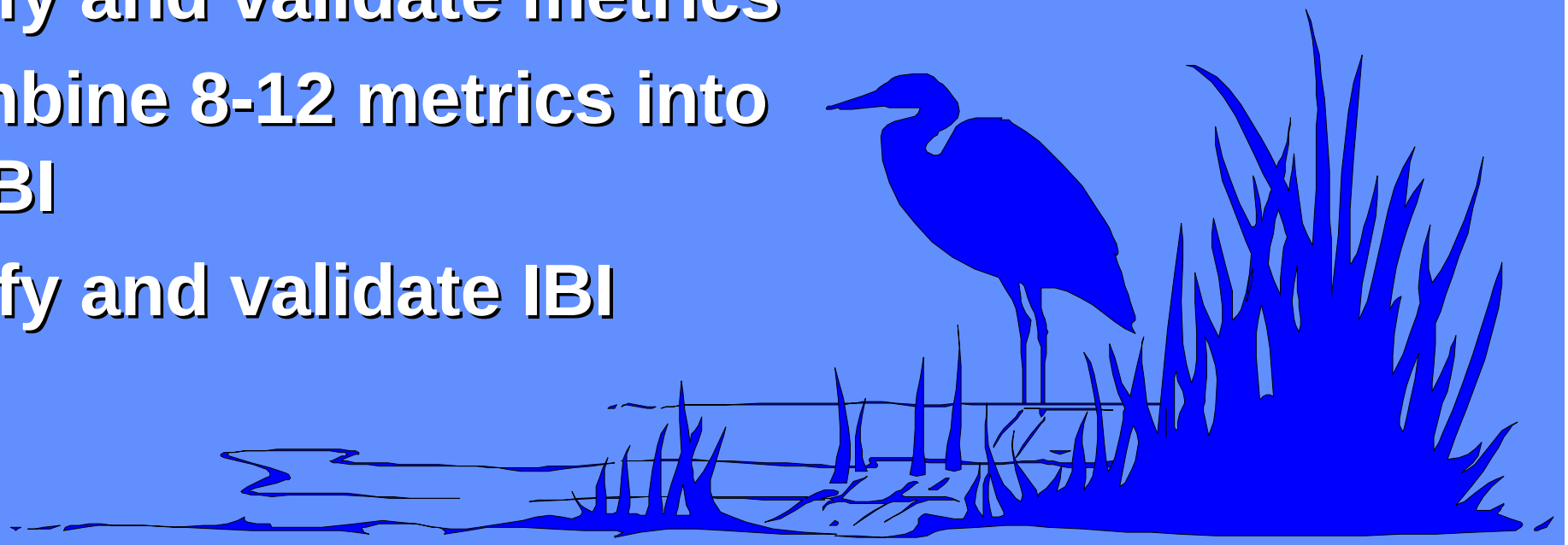
Measure chemical and physical attributes

Identify metrics

Verify and validate metrics

Combine 8-12 metrics into an IBI

Verify and validate IBI



Definitions

- **Attribute**: any measurable component of a biological system
- **Metric**: attribute that shows a quantitative change in value along a gradient of human influence
- **Multimetric Index**: a number that integrates several biological metrics to express a site's condition or health

Selecting Metrics

ATTRIBUTES

Taxa Richness

Number of Individuals

Number of Intolerant Species

Percent Shredders

Percent of Intolerant Individuals

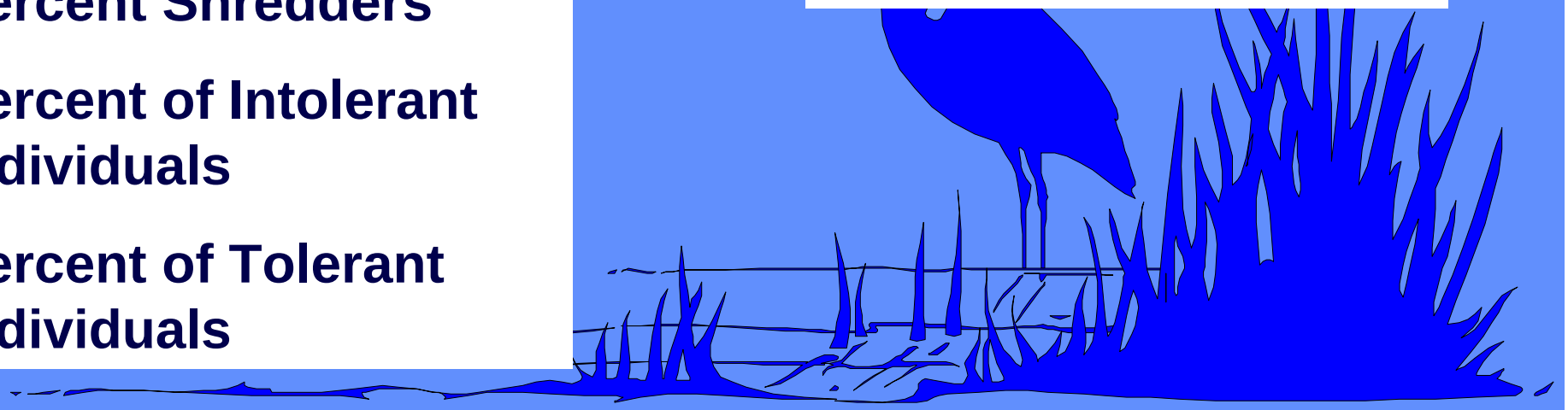
Percent of Tolerant Individuals

METRICS

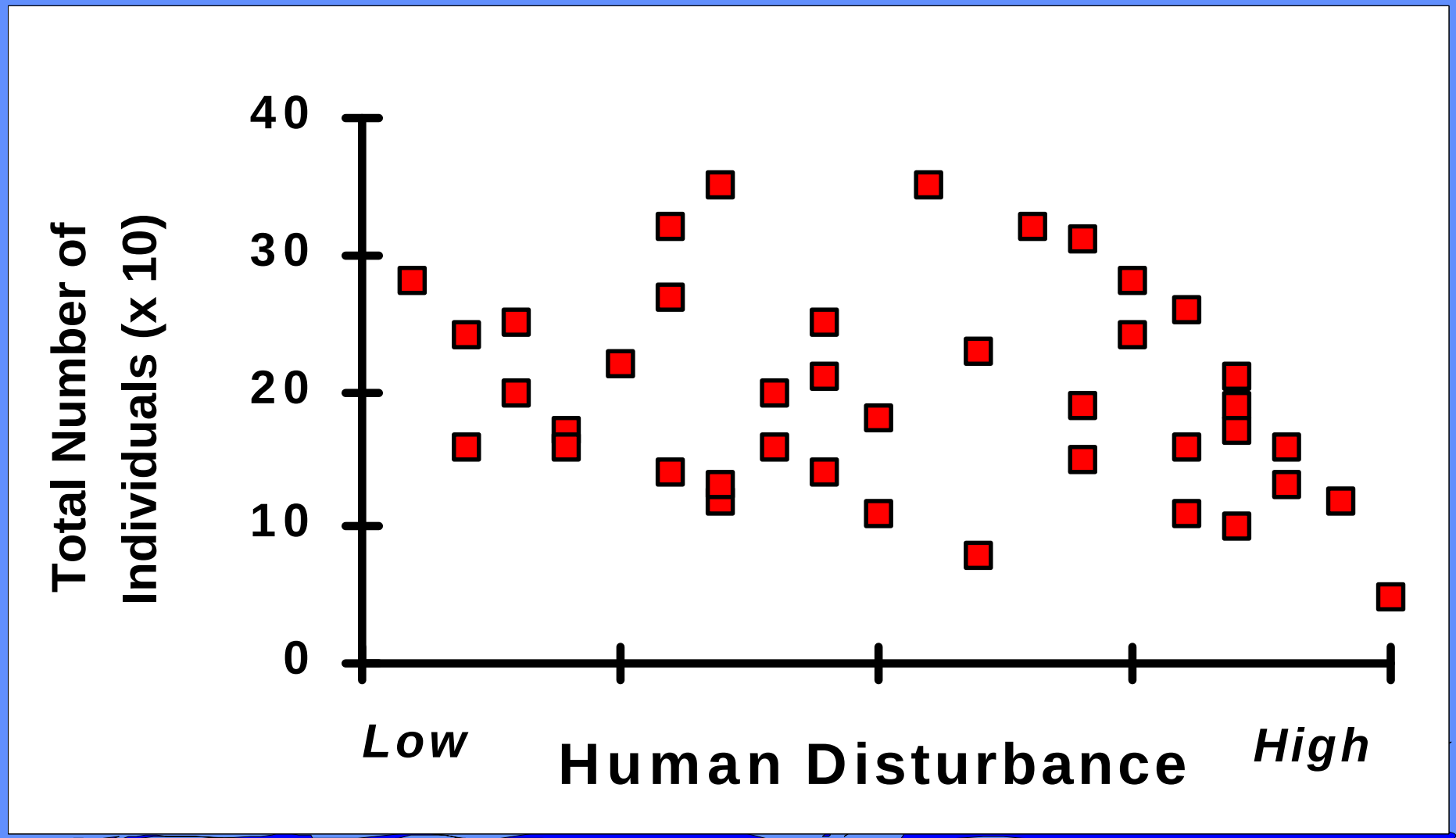
Taxa Richness

Number of Intolerant Species

Percent of Tolerant Individuals

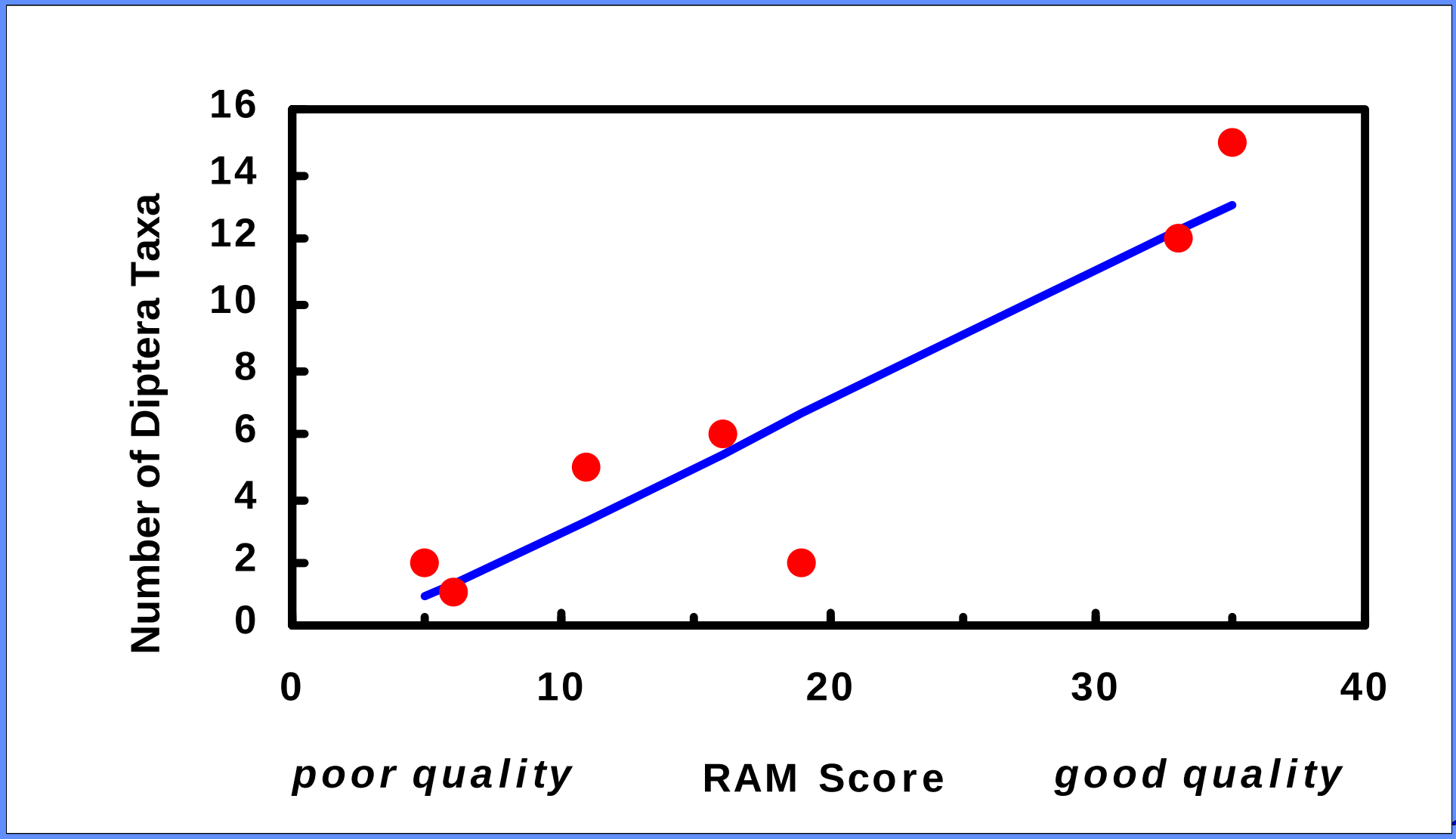


Total Abundance



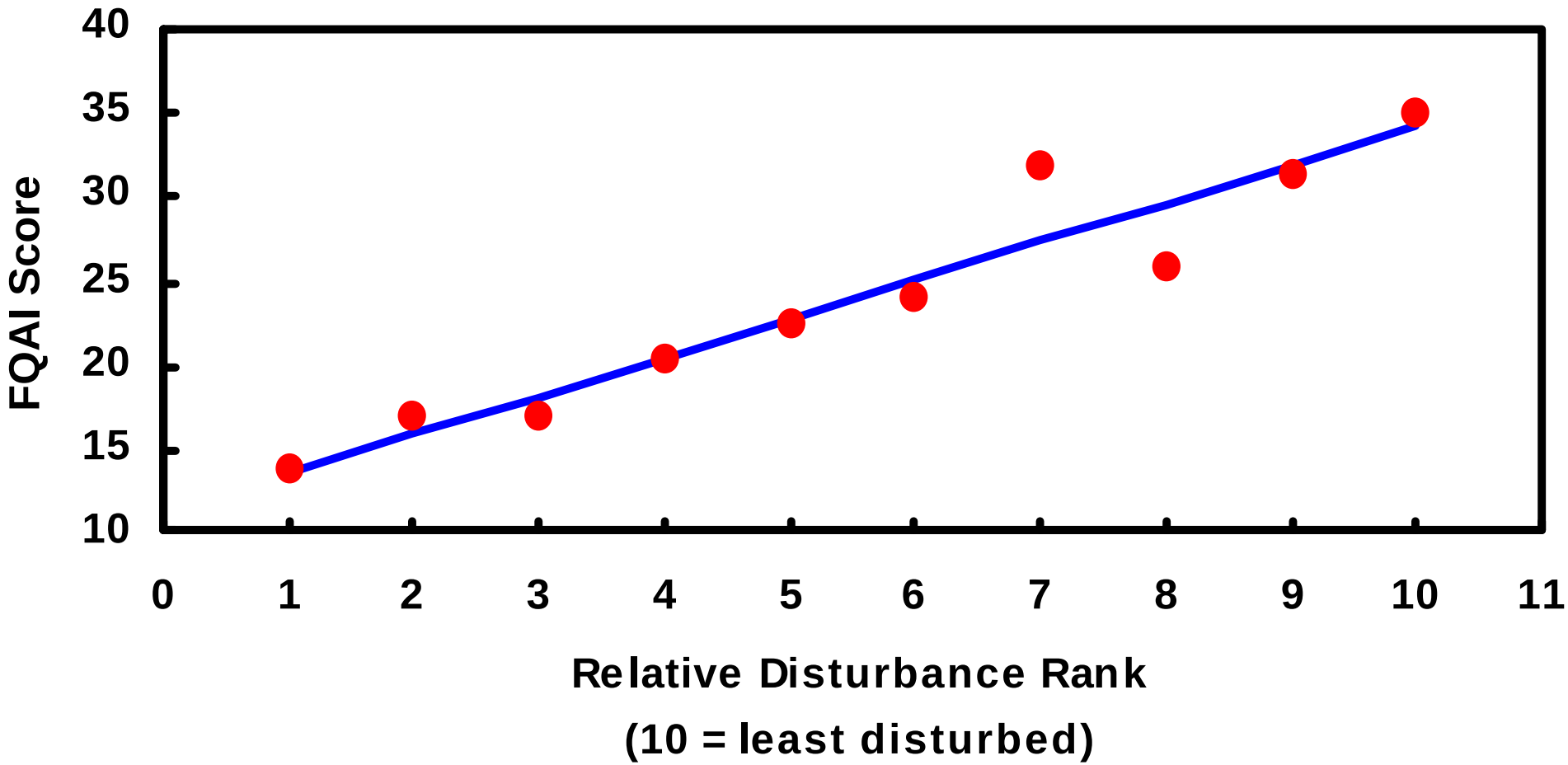
Number of Diptera Taxa

(Source: Ohio EPA)



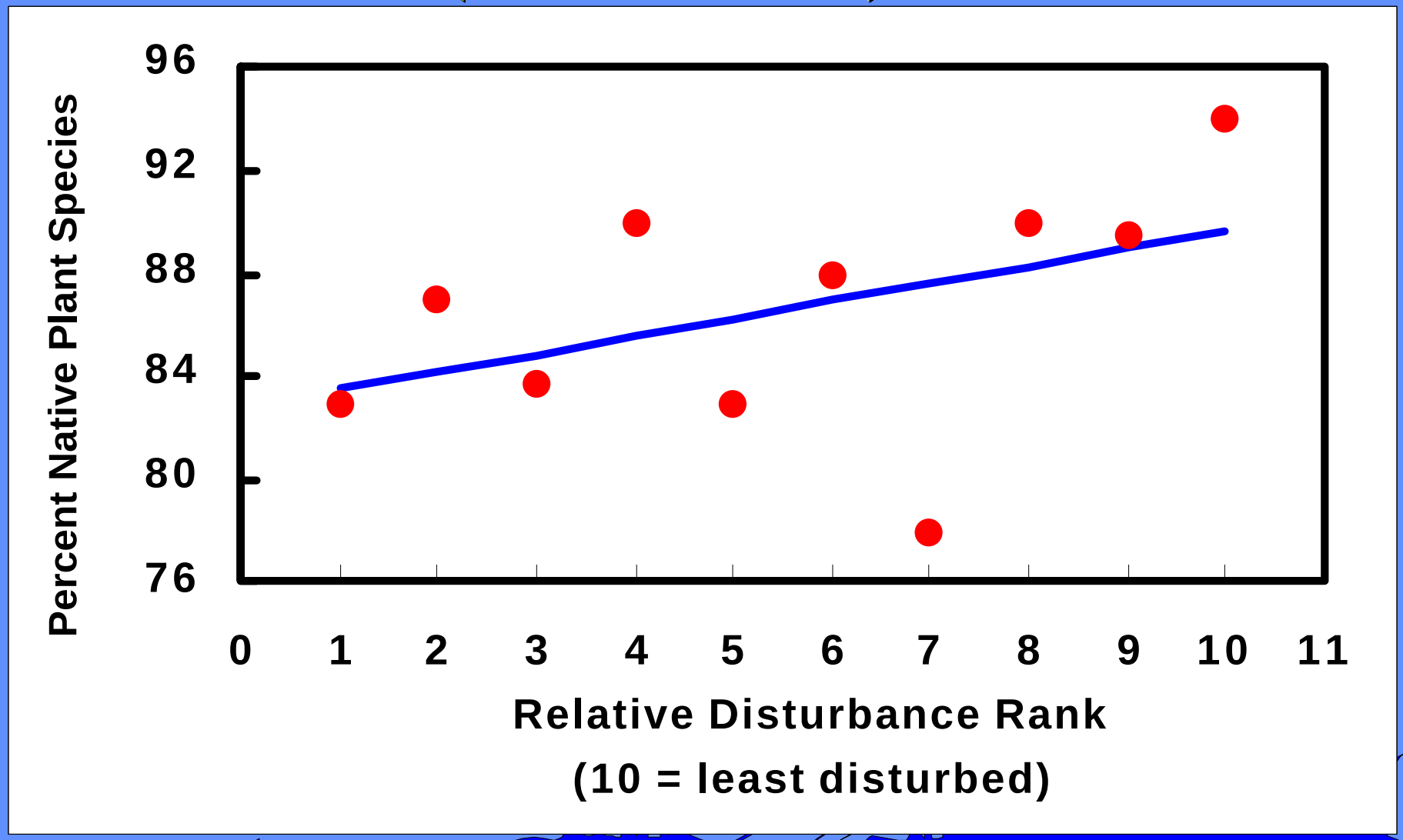
Floristic Quality Assessment Index

(Source: Ohio EPA)

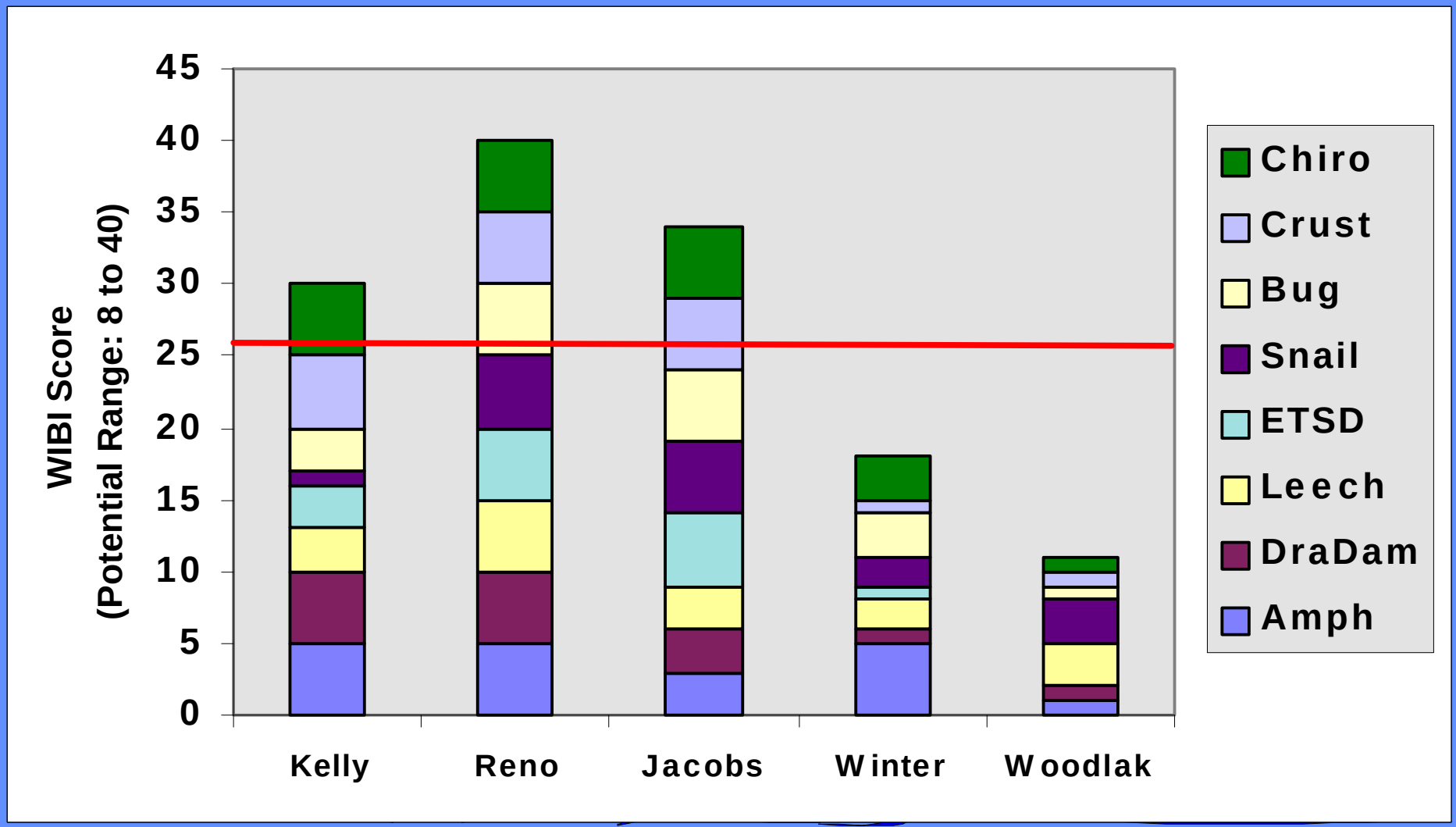


Percent Native Plant Species

(Source: Ohio EPA)



MN Wetland Index of Biological Integrity (WIBI)



Phase II - Implementing Bioassessment Protocols

- Sample biological community and support it with screening-level chemical and physical data.
- If there are signs of impairment, then make more extensive (and expensive) biological, chemical, and physical measurements to diagnose stressor(s).

Reporting on Site Condition

- IBI score
- Written description of site condition
- Metric scores
- Written description of each metric compared to reference conditions

For More Information

Wetlands Division Web Page

- www.epa.gov/owow/wetlands
- “Water Quality, Monitoring, and Assessment”

Wetland Information Hotline

(contractor operated)

- 1-800-832-7828
- wetlands-hotline@epamail.epa.gov